



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,933	05/31/2002	Claudius Kornann	P21955	8751
7055	7590	09/27/2004	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C.			CHANEY, CAROL DIANE	
1950 ROLAND CLARKE PLACE			ART UNIT	
RESTON, VA 20191			PAPER NUMBER	

1745

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/031,933	KORMANN, CLAUDIUS	
	Examiner	Art Unit	
	Carol Chaney	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "the d₅₀ value" and "the value" in lines 4 and 5 of the claim. There is insufficient antecedent basis for this limitation in the claim. These values are presumed to reference particle size distributions, but the particles which d₅₀ and d₉₀ reference are unclear. The values could refer to either primary particles or agglomerated, secondary particles.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 19-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al., US Patent 6,699,618.

Noda et al. disclose lithium manganese composite oxides. Example 5 is a material having an average particle size of 0.5 microns, a specific surface area of 0.9 m²/g, and a porosity of 1.8 %. The particle size of 0.5 micron is the result of "crushing"

the synthesized lithium-manganese oxide. (See column 13, lines 23-40 and column 14, lines 1-6.)

The disclosure of Noda differs from applicants' disclosure in that Noda et al. do not specifically disclose an internal pore volume and do not disclose a particle size distribution from which a value of d_{90} can be obtained. A total porosity of 1.8% will inherently result in a total internal pore volume of less than 0.03 ml/g, and a thorough mechanical crushing process resulting in an average (d_{50}) particle size of 0.5 microns will result in a d_{90} value for the ground powder sample of less than 30 microns.

With regards to claims 5-7, and 23-28 adjustments of particle size distributions and average particle sizes will clearly affect such factors as particle packing and amount of electrode/electrolyte interface in a battery. Adjustment of particle size distribution and average particle size is considered within the skill of the ordinary artisan, and therefore applicants' invention as a whole would have been obvious to one of ordinary skill in the art based upon the disclosure of Noda et al.

Claims 8, 11, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al., in view of van Ghemen et al., US Patent 5,879,654.

Noda et al. disclose applicants' invention essentially as claimed, with the exception that Noda et al. do not disclose preparation of lithium manganese spinel compound by heating first under an inert atmosphere and later under an oxidizing atmosphere. Noda et al. include the use of boron oxide as a sintering agent. (See column 13, Table I.) For thermal solid state reactions, such as taught by Noda et al.,

Art Unit: 1745

vanGhemmen et al. teach the starting materials oxidation states and the final product oxidation states will determine the choice of oxidizing, reducing or inert atmospheres to be used. (See column 1, lines 52-64.) Thus, it would have been obvious to one of ordinary skill in the art to choose inert and oxidizing atmospheres for the reactions disclosed by Noda et al. in order to adjust final product oxidation states.

Allowable Subject Matter

Claims 9, 10, 12, 13-15, and 29 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The prior art does not suggest the use of Li_2O_3 and Mn_3O_4 as starting materials, and a first heating in a non-oxidizing atmosphere, and a second heating in an oxidizing atmosphere to form crystalline lithium manganese oxide as recited in claim 9. The prior art further does not suggest preparation of lithium manganese oxides by a thermal solid state reaction as recited in claim 8, followed by spray drying a suspension of the in water with an alkaline lithium compound.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Matsubara et al., US Patent 6,045,771

Yamashita et al., US Patent 6,270,924.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (571) 272-1284. The examiner can normally be reached on Mon - Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Carol Chaney
Primary Examiner
Art Unit 1745

23 September 2004